Appendix III. mentions, in addition to the observations of physical quantities like wind, pressure, temperature, and humidity, no fewer than seven kinds of weather phenomena (fog, clouds, precipitation, visibility, etc.), and only as additional and facultative do we find wind, temperature, and humidity in the upper air, in spite of the fact that knowledge of the latter data is essential for a real prediction of weather phenomena, whereas the most minute description of present weather does not form a guarantee against sudden changes. Some years ago it might have been urged that sufficiently recent upper-air data were not available—we have shown, however, in Holland that the aeroplane is an excellent substitute for the kite or the cable balloon in almost any weather, and hence this excuse is no longer permissible. In this respect Appendix III. almost looks like a step backwards.

Certainly the multitude of codes introduced by European meteorological institutes since the war is a nuisance, but it may be taken as a symptom of the general dislike of the codes prescribed in Appendix IV. These include units, like the millibar, unfamiliar to the majority of Continental meteorologists (unless in purely scientific work), and change codes for the transmission of the usual elements without any real gain for practical purposes, and they do not use sufficient economy with the room available in the telegrams. A few specimens may illustrate this. Wind direction is given in two figures as usual, but in a scale of 1 to 72 instead of 1 to 32; this means that an accuracy of 5° is claimed. Every meteorologist knows that such accuracy is imaginary—the exposure of the anemometer, the turbulence of the winds, etc., cause larger variations with space and time. No fewer than four figures are allotted to past and present weather. The result is that the observer is puzzled as to the number he is to choose out of 50 or 100, five or six numbers applying equally well, or he gets into the habit of reporting some favourite phenomenon —the very slightest degree of haze, for instance. The multitude of phenomena reported makes one lose sight of the distribution of any particular class.

In our view, Appendix IV. is a mistake, and ought to be deleted as soon as possible; it may prevent some States from joining the convention, Article 34 of which allows a minority of one-fourth or even less to prevent any modification of the annexes. General rules ought to be given in the convention, details being left to a competent body like the "Comité Météorologique International," reconstituted at Paris in October, 1919, which certainly is fully aware of the need for reforms, and will choose the best way to ensure general approval.

In the meantime, reforms are not being postponed; the majority of the Continental countries have already their wireless collective reports, and others will soon follow—special route reports for flying purposes are being exchanged, for example, between England, France, Belgium, and Holland. Meteorologists are thankful for the stimulus which aerial navigation has given to their weather services; they admire the desire for organisation and centralisation apparent in the convention; but they cannot overlook the fact that meteorology has other important applications. Theoretically it might be argued that these may look after themselves; practically it is impossible to maintain an independent system of information, say for agricultural purposes. In following up the historical line, the Comité International will try to serve *all* purposes equally well.

E. VAN EVERDINGEN.

Child Physiology.

The Principles of Ante-Natal and Post-Natal Child Physiology: Pure and Applied. By W. M. Feldman. Pp. xxvii+694+6 plates. (London: Longmans, Green, and Co., 1920.) Price 30s. net.

DR. FELDMAN'S work is a notable addition to the books which deal with physiology. As in them, so in this volume, the reader is impressed by the great change which the past decade has wrought in the content of physiological science, and especially in the predominance of physics, of mathematics, and of chemistry which is so noticeable. Here and there one comes upon pages occupied almost entirely with mathematical formulæ. Dr. Feldman's book has all these characters; but it has also another feature, which is novel: it brings to the study of the physiology of the child (up to puberty) a consideration of the conditions of life which exist before birth, and an evaluation of the effect which the process of birth itself has upon these conditions. It has in this respect and for this reason what one might term a fructifying novelty. It sweeps into the scope of child physiology not only the vital processes of fœtal life, which differ merely in details from those which prevail after birth, but also those of embryonic life, which are so manifestly unlike physiology that we commonly call them "embryology," as if they were something apart; and it travels still further back towards the origins of

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things and brings in the physiology of the germ or heredity, which it requires an effort of the mind to associate with physiology at all. With so novel an outlook and so enlarged a sphere, it is impossible that everything should be exact and beyond argument; much must remain for a time uncertain, and theories will abound, and do abound, within the cover of this book. For example, the statement that the normal new-born infant is in a condition resembling acidosis is not by any means secure against attack, as a research by Sehom, made so recently as 1919, shows.

Dr. Feldman does not claim to carry over into pathology the ideas which this widened outlook of physiology suggests, and yet indirectly disease and the abnormal are recognised as lying just below the horizon in almost every part. Thus the peculiarities of the fœtal circulation underlie every statement which one can make regarding congenital heart disease. And the converse is also true, for the fact that the fœtal heart beats before and even at birth in a fœtus possessing neither brain nor spinal cord throws light upon the physiology of cardiac action before birth, and suggests that its rhythm is myogenic, and not neurogenic, in origin. Interesting notions spring up on every page, and the reader can scarcely escape the stimulation to think out for himself their application to all sorts of phenomena. One is well accustomed to apply physiology to the clarification of the diseases of adult tissues and organs; but a certain degree of novelty attaches to the effort to look at the pathological occurrences in the new-born infant in the light supplied by the special conditions of ante-natal physiology. For example, the umbilicus is, so to say, the "one portal" by which all things (food supplies, oxygen for respiration, and the germs of disease and toxic substances) reach the unborn infant—it lives through its umbilicus, and it may die by its umbilicus—and after birth, whilst it is no longer nourished by the navel, it may yet for a time be infected through it, as in cases of septic mischief round the root of the cord stump. Most text-books speak with an uncertain sound regarding the diseases peculiar to the new-born infant—the neonatal maladies, as they are called; it will ere long be found that much which is inexplicable in their characters and causation is made plain by the study of ante-natal physiology as it is affected by the impact of birth-traumatism.

The book is abundantly illustrated and admirably arranged, and the author is particularly happy in his choice of the quotations with which he ushers in each chapter. For instance, what a range of thought along novel lines is brought before the reader's mind by Samuel Butler's paradoxical truth with which the work begins: "Birth . . . is commonly considered as the point at which we begin to live. More truly it is the point at which we leave off knowing how to live." One is tempted to turn away from the thought as, in a sense, mental somersaulting; but if one resists this inclination and looks fairly and wholly at it, one sees that Nature's ante-natal provision for the well-being of the unborn child is as near perfection as can be imagined. The fœtus, so to say, knows how to live. Birth comes as the jolt due to the changing of the gearing, and it is some time before the new-born infant, with all the aid that doctor, nurse, and mother can give him, can be said to be in harmony with his environment.

We should like to follow out other lines of thought suggested by this volume, such as His's dictum: "The ultimate aim of embryology is the mathematical derivation of the adult from the distribution of growth in the germ"; but enough has been said to send the interested reader to the book itself, where he will find fertile fields for the intellect to water and in due season to reap.

J. W. B.

Forest Research.

The Fungal Diseases of the Common Larch. By W. E. Hiley. Pp. xi+204. (Oxford: At the Clarendon Press, 1919.) Price 12*s.* 6*d.* net.

THIS volume is the most important contribution to the scientific literature of forestry that has been made for some years. Mr. Hiley was well advised to select the larch as the subject of his first investigation as Research Officer in the School of Forestry in Oxford, for it is in many respects the most important species of tree that is cultivated in this country. Moreover, it is a tree the health of which has given much concern to foresters and others for many years past.

After an introductory chapter on the general relationships of host and parasite, and on the morphology of the larch, Mr. Hiley proceeds to deal with the larch disease, or larch canker in the specific sense of the term. This is due to the attack of a Discomycetous fungus, which is usually known in this country under the name of *Dasyscypha calycina*. The author does well to remind us that M. J. Berkeley was the first to recognise the fungal character of this disease, although the work of Willkomm and of Robert Hartig is more frequently cited. Hartig, followed by Massee, believed that infection could take place only through a wound, and it must be said that there is much observational and experimental evi-

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